AMENDMENT NO. 1 DECEMBER 2023

TO

IS 16393 : 2015 GEOSYNTHETICS — GEOTEXTILES USED IN SUBSURFACE DRAINAGE APPLICATION — SPECIFICATION

(*Page* 1, *clause* **4.2**, *third sentence*) — Insert the following after second sentence:

'Polyolefin material shall be UV stabilized by adding suitable UV stablizer and/or cardon black. Polyolefin material,if manufactured by using carbon black shall contain 2 percent to 3 percent of carbon black by mass with satisfactory dispersion.'

(*Page* 4, *Table* 1) — Substitute the following for existing table:

Table 1 Requirements of Geotextiles for Subsurface Drainage Applications

(*Clauses* 4.3 *and* 5.4)

Sl No.	Characteristic(s)	Requirements				Method of Test, Ref to
		Class 1		Class 2		
		Elongation < 50 percent	Elongation ≥ 50 percent	Elongation < 50 percent	Elongation ≥ 50 percent	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	**Index properties**					
	i) Type of geotextile	← Woven/non-woven →		← Woven/non-woven →		—
	ii) Roll length, m, *Min*	← 50 or 100 or as agreed →		← 50 or 100 or as agreed →		IS 1954
	iii) Roll width, m, *Min*	← 2.0 or 5.0 or as agreed →		← 2.0 or 5.0 or as agreed →		IS 1954
	iv) Grab strength, N, *Min*	1 100	700	800	500	IS16342
	v) Sewn seam strength, N, *Min* (*see* Note 1)	990	630	720	450	IS 15060
	vi) Trapezoidal tear strength, N, *Min*	400	250	300	180	IS 14293
	vii) CBR puncture strength, N, *Min*	2 250	1 400	1 700	1 000	IS 16078
	vii) Burst strength, kPa, *Min*	2 700	1 300	2 100	950	IS 1966 (Part 2)
B	**Structural integrity properties:** (*see* Note 2)					IS 1607
	i) Permitttivity, sec^{-1} , *Min*					IS 14324
	a) For course soil	← 0.5 →		← 0.5 →		
	b) For medium soil	← 0.2 →		← 0.2 →		
	c) For fine soil	← 0.1 →		← 0.1 →		
	ii) Apparent opening size (AOS), mm, *Max*					IS 14294
	a) For course soil	← 0.43 →		← 0.43 →		
	b) For medium soil	← 0.25 →		← 0.25 →		
	c) For fine soil	← 0.22 →		← 0.22 →		
C	**Durability properties**					
	i) Resistance to installation damage, percent retained strength, SC/SW/GP (*see* Note 3), *Min*	← 95/93/90 →		← 95/93/90 →		IS 17420

Price Group 1

ii) Ultraviolet stability at 500 h, retained strength, percent of original strength, *Min*	70	70	70	70	IS 13162 (Part 2)

NOTES

1 The parameter shall be tested, when product is supplied with seam. Refer to IS 16363 for stitch and overlap seam requirements.

2 The structural integrity properties of geotextile is affected by the in-situ soil gradation. Geotextile fabric selection is determined by the presence of coarse, medium, or fine soil particles at the installation site. Soil classification into these categories is based on the percentage of particles passing through a 0.075 mm (200 mesh) sieve:

a) Course soil: In situ soil passing < 15 percent;
b) Medium soil: In situ soil passing 15 to 50 percent; and
c) Fine soil: In situ soil passing > 50 percent.

3 Resistance to installation damage (loss of load capacity or structural integrity) when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW) and crushed stone classified as poorly graded gravel (GP).

4 Class 2 geotextile may be specified for trench drain application based on field experience, laboratory testing and visual inspection of a geotextile sample removed from a field test section or when the subsurface drain depth is less than 2 m and drain aggregate is less than 30 mm.

5 In addition to the above default filtration property value of permittivity and AOS, site specific geotextile design may be performed if one or more of the following problematic soil environments is encountered: unstable or highly erodible soils such as non-cohesive silts, gap graded soils, alternating sand/silt laminated soils, dispersive clays and/or rock flour

(*Page* 5, *Annex* A) — Substitute the following for the existing entries for IS 1966 (Part 2) : 2009, IS 6359 : 1971, IS 13321 (Part 1) : 1992, IS 15060 : 2001

IS No	*Title*
IS 1966 (Part 2) : 2022/ ISO 13938-2 : 2019	Textiles — Bursting properties of fabrics: Part 2 Pneumatic method for determination of bursting strength and bursting distension (*third revision*)
IS 6359 : 2023	Method for conditioning of textiles (*first revision*)
IS 13321 (Part 1) : 2022/ ISO 10318-1 : 2015	Geosynthetics: Part 1 Terms and definitions (*first revision*)
IS 15060 : 2018 / ISO 10321 : 2008	Geosynthetics — Tensile test for joints/seams by wide-width strip method (*first revision*)

(*Page* 5, *Annex* A) — Delete the entry for IS 16380 : 2015.

(*Page* 5, *Annex* A) — Insert the following new entry at the end:

IS No.	*Title*
IS 16363 : 2015	Geosynthetics — Guidelines for installation of geotextile used in subsurface drainage application
IS 17420 : 2020/ ISO 10722 : 2019	Geosynthetics — Index test procedure for the evaluation of mechanical damage under repeated loading — Damage caused by granular materials (laboratory test method)

(*Page* 8, *Annex* C) — Delete and renumber subsequent Annex.

(TXD 30)

Publication, BIS, New Delhi